Student Feedback from April 2013 SPICE Class

NAIF provided the bold-faced topical areas. Student comments are shown below almost exactly as written on the paper forms except that text within square brackets like [ ] is by NAIF. Sixteen of fifty-one students provided anonymous feedback; the student number is shown as "n)".

❒ **Missing core functionality**

7) Provide some tools to generate product [means instrument?] footprint coverage.
8) Am very interested in the Digital Shape Kernel coming soon.
10) A star catalog capability would be very helpful for in-flight calibration planning.
11) My only request is for SPICE to be thread-safe so that it could be used to process very, very large datasets. I understand why it isn't, and can work around this, but in a perfect world, that's what I'd like.
12) Add ring-specific derived quantities.

❒ **Additional kinds of data that should be handled**

12) Ring models: consider defining washer and donut body shapes and tie these to the orbit definition of a ring.

❒ **Interfaces to SPICE data**

4) Python and C++; REST or SaaS (SPICE as a Service)
5) It would be great to see some real-time examples of using interfaces. [Not clear what this is getting at.]
6) Would be interesting to work with "real-time" data. [Not sure what this means–perhaps this is referring to making a C-kernel from raw telemetry data?]
7) A search engine is expected to help search the right kernels.
10) Offering a tar file containing generic kernels would be helpful.

❒ **Complexity of using SPICE components**

1) Not easy to understand since the names are from FORTRAN.
7) SPICE has very complicated stuff, but I see the improvement on how to use the software. The examples, tutorials and help docs are very important. Expect to see more examples provided by the user community and the developers.

❒ **Code documentation (the "headers" that provide instructions for using a module)**

1) Useful and helpful.
7) Very good.
16) The most impressive part of SPICE [along with the other types of documentation].

❒ **Reference documents (the so-called "required reading" documents)**

1) Too much information.
5) Because there are a lot of reference documents maybe you can retrieve the most important?
7) Lots of materials. It's kind of a pain to read them carefully to find the instructions.

❒ **Access to SPICE software**

1) Easy.
7) It's good to provide various options for users to choose from (MATLAB, C, IDL and more). But too much variety will [adversely] affect the SPICE [NAIF] Team to provide better services if resources are limited.

❒ **Access to generic (mission independent) kernels**

1) Still not very clear.
3) File extensions don't match (or resemble) the type of kernel; this makes for terribly unnecessary confusion.
5) Why do kernels have such strange names?
8) Would have been nice to have finding and downloading an appropriate kernel as a part of a lesson.

❒ **Access to mission operations kernels (prior to archiving)**

[no comments on this topic]

❒ **Access to PDS archived kernels**

7) Talk a little bit more about PDS archives so users will have an idea how to look for the kernels they want.

❒ **Metadata for kernels (info about any particular data file)**

5) Real-time example? [Not sure what this is asking for.]
6) This could be very useful for people who are just beginning to work with SPICE.

❒ **"Hands-on" programming lessons (those used at this class)**

1) Very useful.
2) The lessons were great. If you can find a way to incorporate more that would be still better.
7) Try [including] other mission data, not just focused on Cassini examples. For example, Mars, moon and Venus.
8) Best part [of the class]. Would have been better to have more to them.
10) Add additional exercises.
11) I have a small laptop, so having a paper copy of the lessons would have been nice. (I could have done this myself if I were better prepared.)

❒ **Tutorials (those used at this class)**

1) Having a complete set of examples in each tutorial would be more helpful.
7) A three-day class is very tight to give detailed instructions. But exercises on which the users can practice are very important. It is also important to talk with the experts if there are questions.
9) [Add a] tutorial on DSK kernels. [Maybe this student left a bit early on the last day– there was a tutorial on this topic, named "Shape Model Preview," right at the end of the class.]

❒ **Training (classes like this one)**

1) Very helpful.
6) It was a little difficult to try to learn so much information in only three days.
9) Add an advanced class [where students may] try to create kernels, practice using the geometry finder subsystem [there was such a lesson, named Event Finding, offered at the very end], and practice using the digital shape kernel subsystem.
10) It would be helpful to have a session on making SPICE kernels, especially for new missions that are preparing for launch. Consider adding an extra half-day for this.
16) The SPICE training was excellent - both in its tutorial part and hand-on lessons programming part.
16) [The class] would greatly benefit from a real mission model [*see explanation below]

❒ **Customer support**

1) I got useful answers.
2) Provide a site where users can provide their own code to share with others.

❒ **International cooperation or collaboration**

7) Difficult when politics are involved.

❒ **Other**

4) Overall I found this to be a very useful class.
7) If a user would input a mission, an instrument and a time, SPICE should automatically organize the kernels [needed] for an application; this would save users a lot of effort.
8) Great class. Brought my ability to use SPICE from zero to a point where I feel comfortable in only a day or two.
9) It was a really good and very useful class. Thank you very much to have spent so much of your time teaching SPICE.
12) For the first time through after a very significant revamp [to the class?] I consider the class very informative. Kudos to the team.
13) I am probably not the kind of student for which this class is intended. I don't use SPICE in my daily work, but I see and hear a lot about it. Thanks to your class I learned and understand the different SPICE file types, who uses them and what they are used for. - In hindsight, and as a suggestion for future students, reading the SPICE background information prior to coming to the class would be very helpful in understanding what is presented in the class.
14) Thanks for your time this week. You guys put together a very useful workshop.
15) Thank you so much for organizing this class, it was a great opportunity to get an overview of SPICE and get some hands-on experience with it. This will definitely prove very useful to me in the future.
16) [* Expansion of comment under "Training" above]: Here is the simple issue I had in mind. I was working recently on the SMAP so called L0A SPS production code. In it where I processed a 2GB radiometer telemetry file comprised of 2 MB scans. I needed to convert each scan start and stop instrument times correlated to spacecraft clock and convert the spacecraft clock times to UTC format in a big loop. For that I used the SPICE code modified by Vance H./JPL for SMAP. What I suggested is to have a single demo of a single SPICE function utilized in a mission Ground System processing application, like the one I presented. Just a general idea of using SPICE functions in very large application loops.